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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,986	04/02/2004	Yoshihiro Isogai	5000-5163	2010
27123	7590	05/25/2007		
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER CANTELMO, GREGG	
			ART UNIT 1745	PAPER NUMBER
			MAIL DATE 05/25/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/816,986

Applicant(s)

ISOGAI, YOSHIHIRO

Examiner

Gregg Cantelmo

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1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-13 and 15-19 is/are rejected.
- 7) ☐ Claim(s) 5 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/2/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed April 2, 2004 has been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

3. The drawings received April 2, 2004 are acceptable for examination purposes.

Specification

4. The disclosure is objected to because of the following informalities: the term "warning" in page 5, line 9 should be --warming--. Appropriate correction is required.

Claim Objections

5. Claim 2 and 10-18 are objected to because of the following informalities:
 - a. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 2 fails to recite additional structure to the apparatus of claim 1 but only serves to define a method of controlling the system of claim 1. Since claim 2

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does not impart additional structure to the apparatus of claim 1, claim 2 fails to further limit the apparatus of claim 1. This objection also applies to claim 11;

b. Claims 10 and 18 recite a "warning device" in line 1 of each claim. The term should be "warming device";

c. Claim 17 is missing a period for ending the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-8 and 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "better output property" in claims 5 and 14 is a relative term which renders the claim indefinite. The term "better output property" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 1-3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over FR 2813994 (FR '994) in view of JP 11-301285 (JP '285).

FR '994 teaches of preventing freezing of the power system in a vehicle. FR '994 discloses a warming device for fuel cell system having a fuel battery 1 and a power storage device 16, wherein the fuel battery 1 is heated by a resistive heater which is powered by the battery 16 (abstract and Fig. 1). Thus FR '994 discloses the claimed second heating device which heats the fuel cell 1 via a resistive heater which is powered by electricity from batteries 16. A control device is provided to control the heating system of FR '994 (see pages 5-6 as applied to claims 1, 10, 18 and 19). In order to determine the temperature of the fuel cell, FR '994 requires the presence of a temperature sensor to determine when to heat the fuel cell using the battery (as applied to claim 10).

Upon heating of the fuel cell in FR '994 the system is capable of being controlled to generate power (claim 2).

The fuel cell stack of FR '994 includes a plurality of independent cells (Fig. 1 as applied to claim 3).

The system includes a device 17 which detects the temperature of the system and determines whether or not the fuel cell 1 requires heating by the battery 16 (as applied to claim 9).

FR '994 does not teach of a battery heating device to heat the power storage device or of the control device connected to the battery heating device (claims 1, 10 and 18-19), of the battery having a temperature sensor therein (claim 10), of the first heating device driven by the electricity of the power storage device (claims 4 and 13).

According to JP '285, extreme low temperatures are known to adversely affect battery performance in a vehicle and deter chemical reaction therein (paragraph 2). In order to address this issue, JP '285 teaches of heating batteries 13 in a vehicle system using an auxiliary power source 30 (applied to claims 1, 10, 18 and 19. Furthermore to determine the temperature of the battery a temperature sensor would be required so as to provide a signal which indicates the temperature of the battery and determine whether or not to heat the battery (as applied to claim 10).

Given that both FR '994 and JP '285 are drawn to power sources in a vehicle and both further recognize the effects of temperature on the power system performance, it would have been obvious to one of ordinary skill in the art to modify the teachings of FR '994 by using the battery heating system of JP '285 since it would have maintained a sufficient operating temperature for the batteries of FR '994 and prevented freezing of the battery components therein. This would have improved the battery operation and thus improved the overall temperature control and power response of the system of FR '994.

As to the functionality of the apparatus of claims 1, 10 and 19: It would have further been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of FR '994 in view of JP '285 such that the controller would be configured to all of the elements therein so as to provide an automated responsive system and that the manner in which the elements are controlled by the controller are not accorded patentable weight with respect to the apparatus. While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural

limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

As to the order of heating in the method of claim 18:

FR '994 teaches of heating the fuel cell via a battery. In order for the battery to efficiently operate so as to power the heating component of the fuel cell, it would have been obvious to first set the battery conditions prior to operating the fuel cell. In doing so, one of ordinary skill in the art would have found it obvious to first heat the battery before heating the fuel cell which is powered by the battery so as to improve the battery performance and provide ideal operating temperatures for the battery which then would be used to heat the fuel cell.

8. Claims 1-4, 9-13, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over FR 2813994 (FR '994) in view of U.S. Patent No. 6,392,388 (Young).

FR '994 teaches of preventing freezing of the power system in a vehicle. FR '994 discloses a warming device for fuel cell system having a fuel battery 1 and a power storage device 16, wherein the fuel battery 1 is heated by a resistive heater which is powered by the battery 16 (abstract and Fig. 1). Thus FR '994 discloses the claimed second heating device which heats the fuel cell 1 via a resistive heater which is powered by electricity from batteries 16. A control device is provided to control the heating system of FR '994 (see pages 5-6 as applied to claims 1, 10 and 19). In order to determine the temperature of the fuel cell, FR '994 requires the presence of a temperature sensor to determine when to heat the fuel cell using the battery (as applied to claim 10).

FR '994 teaches a method for controlling a warming device for a fuel cell system having a fuel battery and power storage device as discussed above. The method includes heating the fuel battery with a heating device which is powered by the power storage device (as applied to claim 18).

Upon heating of the fuel cell in FR '994 the system is capable of being controlled to generate power (claims 2 and 11).

The fuel cell stack of FR '994 includes a plurality of independent cells (Fig. 1 as applied to claims 3 and 12).

The system includes a device 17 which detects the temperature of the system and determines whether or not the fuel cell 1 requires heating by the battery 16 (as applied to claim 9).

FR '994 does not teach of a battery heating device to heat the power storage device or of the control device connected to the battery heating device (claims 1, 10 and 18-19), of the battery having a temperature sensor therein (claim 10), of the first heating device driven by the electricity of the power storage device (claims 4 and 13).

According to Young, extreme low temperatures are known to adversely affect battery performance in a vehicle and deter chemical reaction therein. In order to address this issue, Young teaches of heating batteries in a vehicle system using the internal resistance generated within the batteries (col. 2, ll. 55-65 as applied to claims 1, 10 and 18-19). Furthermore to determine the temperature of the battery a temperature sensor would be required so as to provide a signal which indicates the temperature of the battery and determine whether or not to heat the battery (as applied to claim 10).

Given that both FR '994 and Young are drawn to power sources in a vehicle and both further recognize the effects of temperature on the power system performance, it would have been obvious to one of ordinary skill in the art to modify the teachings of FR '994 by using the battery heating system of Young since it would have maintained a sufficient operating temperature for the batteries of FR '994 and prevented freezing of the battery components therein. This would have improved the battery operation and thus improved the overall temperature control and power response of the system of FR '994.

As to the functionality of claims 1, 10 and 19: It would have further been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of FR '994 in view of Young such that the controller would be configured to all of the elements therein so as to provide an automated responsive system and that the manner in which the elements are controlled by the controller are not accorded patentable weight with respect to the apparatus. While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

As to the order of heating in the method of claim 18:

FR '994 teaches of heating the fuel cell via a battery. In order for the battery to efficiently operate so as to power the heating component of the fuel cell, it would have been obvious to first set the battery conditions prior to operating the fuel cell. In doing so, one of ordinary skill in the art would have found it obvious to first heat the battery before heating the fuel cell which is powered by the battery so as to improve the battery performance and provide ideal operating temperatures for the battery which then would be used to heat the fuel cell.

Allowable Subject Matter

9. Claims 5 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Note that while claims 6-8 and 15-17 are dependent upon claims 5 and 8, respectively, these claims are rejected under 112 2nd

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paragraph above and require resolution of the 112 issue above prior to being deemed allowable.

10. The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record reasonably teach, suggest or render obvious the invention of claims 5 and 14.

Claims 5 and 14 each further defines the first heating device to have a main heating body and auxiliary heating body as specified therein.

While the prior art of record shows that it is known in the art to heat a battery using a heating device there is no reasonably teaching or suggestion by the prior art of record for a first heating device having a main heating body and auxiliary heating body as specified therein.

Thus the inventions of claims 5 and 14 are held to be novel over the prior art of record as would respective dependent claims 6-8 and 15-17 (upon resolution of the outstanding 112 rejection above).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



gc
May 22, 2007

Gregg Cantelmo
Primary Examiner
Art Unit 1745